

ABSTRACT OF THE DISCLOSURE

An activated catalyst for the rapid decomposition of H_2O_2 is provided wherein a porous high surface area catalyst base, e.g. a zeolite molecular sieve (ZMS) is impregnated or doped with a solution of metal cation salts and an ionic promoter, dried and calcined to form an activated catalyst. Such activated catalyst, in the form of a porous monolith or chunks, extrudate, pieces, pellets, or spheres, can be poured into and confined, in a tight pack, in a cavity of a rocket housing, downstream of a pressurized H_2O_2 tank. The H_2O_2 is flowed through the catalyst and undergoes rapid decomposition into steam and O_2 and flows out the propellant nozzle of such rocket. Advantages of such activated catalyst are that it can be employed to rapidly decompose H_2O_2 to propel a) a mono-propellant rocket, b) a bipropellant rocket (having fuel and a combustion chamber) and c) a hybrid rocket (powered by H_2O_2 and fuel grain) and can also be used for a starter cartridge decomposition catalyst, a gas generator decomposition catalyst and the like. Another benefit of the activated catalyst of the invention is its low weight which is highly suitable in small flightweight rocket systems.